

What is claimed is:

1. A clutch mechanism of a motor, the motor having a shaft including a first stop, a worm associated with the shaft, a gear engaged by the worm, and a friction surface near the stop of the shaft, the clutch mechanism comprising:
  - a pressure plate mounted for movement with respect to the shaft toward and away from the friction surface,
  - a spring constructed and arranged to bias the pressure plate towards the friction surface, and
  - a second stop constructed and arranged to limit movement of the pressure plate in a direction away from the friction surface,whereby 1) under a back drive condition of the motor when the motor is not energized and the gear is moved by an externally applied torque causing an axial force to be exerted on the worm inducing an axial and an angular movement to the shaft, the pressure plate is constructed and arranged to move towards and engage the friction surface thereby impeding rotation of the shaft, 2) when the motor is driving in a certain direction, the pressure plate is constructed and arranged to move against the bias of the spring and away from engagement with the friction surface and towards the second stop, and 3) when the motor is driving in a direction opposite the certain direction, the pressure plate is constructed and arranged to engage the first stop, preventing the pressure plate from engaging the friction surface.
2. The clutch mechanism of claim 1, wherein a portion of the shaft includes a helix and the pressure plate includes a helical configuration that mates with the helix of the shaft.
3. The clutch mechanism of claim 2, wherein the pressure plate includes a central boss having an opening defining the helical configuration, the pressure plate including a recess around the central boss.

4. The clutch mechanism of claim 3, wherein the spring is a compression spring disposed about the boss within the recess of the pressure plate.
5. The clutch mechanism of claim 1, wherein the second stop is a disk-shaped retainer fixed to an end of the shaft.
6. The clutch mechanism of claim 5, wherein the end of the shaft includes a groove, the retainer being fixed to the shaft by engagement with surfaces defining the groove.
7. The clutch mechanism of claim 1, wherein the friction surface is part of a housing of the motor.
8. The clutch mechanism of claim 1, wherein the first stop is defined by a shoulder in the shaft.
9. The clutch mechanism of claim 1, wherein one of the pressure plate and the friction surface includes friction increasing structure.
10. The clutch mechanism of claim 9, wherein the friction increasing structure is a surface finish or a secondary material on the pressure plate or friction surface.
11. A clutch mechanism of a motor, the motor having a shaft, a worm associated with the shaft, a gear engaged by the worm, and a friction surface, the clutch mechanism comprising:
  - a pressure plate mounted for movement with respect to the shaft toward and away from the friction surface,
  - a spring constructed and arranged to bias the pressure plate towards the friction surface, and
  - a stop constructed and arranged to limit movement of the pressure plate

in a direction away from the friction surface,

whereby under a back drive condition of the motor when the motor is not energized and the gear is moved by an externally applied torque causing an axial force to be exerted on the worm and thus inducing an axial and an angular movement to the shaft, the pressure plate is constructed and arranged to move towards and engage the friction surface thereby impeding rotation of the shaft.

12. The clutch mechanism of claim 11, wherein a portion of the shaft includes a helix and the pressure plate includes a helical configuration that mates with the helix of the shaft.
13. The clutch mechanism of claim 12, wherein the pressure plate includes a central boss having an opening defining the helical configuration, the pressure plate including a recess around the central boss.
14. The clutch mechanism of claim 13, wherein the spring is a compression spring disposed about the boss within the recess of the pressure plate.
15. The clutch mechanism of claim 11, wherein the stop is a disk-shaped retainer fixed to an end of the shaft.
16. The clutch mechanism of claim 15, wherein the end of the shaft includes a groove, the retainer being fixed to the shaft by engagement with surfaces defining the groove.
17. The clutch mechanism of claim 11, wherein the friction surface is part of a housing of the motor.
18. The clutch mechanism of claim 11, wherein one of the pressure plate and the friction surface includes friction increasing structure.

19. The clutch mechanism of claim 18, wherein the friction increasing structure is a surface finish or a secondary material on the pressure plate or friction surface.
20. A method of impeding rotation of a shaft under a back drive condition of a motor, the method including the steps of:
  - providing a motor having a shaft, a worm associated with the shaft, a gear engaged by the worm, and a friction surface,
  - providing a clutch mechanism including a pressure plate mounted for movement with respect to the shaft toward and away from the friction surface; a spring biasing the pressure plate towards the friction surface; and a stop constructed and arranged to limit movement of the pressure plate in a direction away from the friction surface, and
  - under the back drive condition when the motor is not energized and the gear is moved by an externally applied torque causing an axial force to be exerted on the worm and thus inducing an axial and an angular movement to the shaft, permitting the pressure plate to move towards and engage the friction surface thereby impeding rotation of the shaft.
21. The method of claim 20, wherein the step of permitting the pressure plate to move includes mounting the pressure plate with respect to the shaft using a helix on the shaft and a mating helical configuration on the pressure plate.